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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,279	08/31/2006	Naokazu Kobayashi	295538US0PCT	9398
22850	7590	09/26/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
LENIHAN, JEFFREY S				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
09/26/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/591,279

**Applicant(s)**

KOBAYASHI ET AL.

**Examiner**

Jeffrey Lenihan

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

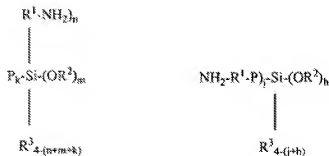
**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 8/31/2006, 11/30/2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Claim Objections

1. Claim 1 is objected to because of the following informalities:



In the current claims, the structures need to be amended to recite the groups  $(\text{R}^1\text{-NH}_2)_n$  and  $(\text{NH}_2\text{-R}^1\text{-P})_j$  as depicted in the specification. As currently shown, these groups lack an opening parenthesis and therefore do not fully define the structures that repeat according to the variables  $n$  and  $j$ , respectively. Appropriate correction is required.

### Claim Rejections - 35 USC § 103

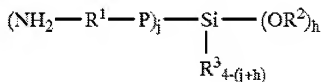
1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al, WO2003/029299, in view of Kobayashi et al, JP 2001-114936, a machine translation of which has been provided. Tsukimawashi et al, US2004/0254301, has been utilized herein as an equivalent English translation of WO2003/029299.
4. The instant claims are directed towards a rubber composition comprising (a) 0.5-35% by weight of a conjugated diene-based (co)polymer rubber, corresponding to either of two depicted formula, having an amino group and an alkoxysilyl group and weight average molecular weight ( $M_w$ ) of 1,000-90,000; and (b) 99.5-65% by weight of a conjugated diene-based (co)polymer rubber having  $M_w$  of 100,000-2,000,000.
5. Tsukimawashi discloses a conjugated diolefin (co)polymer rubber having the formula



wherein P is a (co)polymer chain of conjugated diolefin or a conjugated diolefin and an aromatic vinyl compound,  $\text{R}^1$  is an alkylene group having 1-12 carbon atoms;  $\text{R}^2$  and  $\text{R}^3$  are independently chosen from the group comprising a  $\text{C}_1$ - $\text{C}_{20}$  alkyl group, etc.; j and h are independently an integer from 1 to 3, with the proviso that j+h is an integer from 2-4. The examiner notes that the above structure corresponds to formula (2) of the instant claim 1. Tsukimawashi further discloses synthesis of (co)polymer rubbers having  $M_w$  of

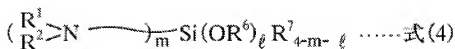
26,000-73,000( see Examples in Tables 3, 10, 13, 21) (claim 1) and the addition of 10-100 parts by weight of extender oil (§0188) (claim 4) and 20-120 parts by weight carbon black and/or silica to the (co)polymer rubber as fillers (§0194, 0196, 0198) (claim 5)

6. Tsukimawashi discloses that it is known in the art that the presence of functional groups such as alkoxysilyl and amino groups in a polymer increases compatibility with commonly used fillers such as silica and carbon black; a tire prepared from a composition comprising a polymer modified by such groups and said fillers is characterized by improved tensile strength (§0009-0013). Tsukimawashi further discloses that the (co)polymer rubber of US20040254301 may be blended with other materials such as natural rubber, styrene-butadiene rubber, etc. for the production of tires and tire treads (§0192). The reference does not specifically disclose the amounts of rubbers, thus implying that any amounts conventionally used for the intended end use are suitable for the invention. Tsukimawashi does not specifically recite the use of a material having the characteristics of molecular weight and functional groups as defined in claims 1 and 3.

7. Kobayashi discloses a rubber composition suitable for use in the production of tires and tire treads (§0001, 0076). Said composition comprises a mixture of (a) 5-95% by weight of a polymer of a conjugated diolefin or of a conjugated diolefin and an aromatic vinyl compound having at least one functional group such as a hydroxyl group (§0030) (claim 3) and (b) 5-95% by weight of a polymer of a conjugated diolefin or of a conjugated diolefin and an aromatic vinyl compound having at least one functional groups chosen from the group comprising alkoxysilyl and amino (abstract, 0040) (claim

1). Monomers such as 1, 3-butadiene and styrene are recited for preparing components (a) and (b). Kobayashi additionally recites that either (a) or (b) of the composition may have  $M_w$  of 1,000-90,000; the other component has  $M_w$  of 90,000-2,000,000 (abstract) (claim 1). Kobayashi further discloses the addition of 10-100 parts by weight of oil (¶0065) (claim 4) and 2-100 parts by weight carbon black; both ranges are based on 100 parts by weight of the rubber composition (¶0069) (claim 5).

8. The following structure is recited by Kobayashi as an embodiment of component (b)



wherein  $R^6$  and  $R^7$  are independently a  $C_1$ - $C_{20}$  hydrocarbon group,  $m$  and  $l$  are independently an integer from 1 to 3, and  $4-m-l$  may be zero (¶0032-0033). As described by Kobayashi, the  $R^1$  and  $R^2$  may be comprise hydrocarbon groups, but are not restricted to such (¶0014), implicitly teaching the use of a primary amine group. The examiner notes that the above structure is similar to the structure disclosed by Tsukimawashi as shown previously in this Office Action. Both structures contain an amino group and an alkoxyisilyl group. Kobayashi discloses that the functional groups serve to increase compatibility of the rubber with the filler, thereby improving tensile strength of the vulcanizate (¶0005).

9. Tsukimawashi and Kobayashi both disclose copolymer rubbers which may be used for the production of tires; Tsukimawashi further recites that the (co)polymer of US2004/0254301 may be blended with additional polymer rubbers for use in the

production of tires. As both the (co)polymer rubber of Tsukimawashi and polymer (b) of Kobayashi contain both an amino group and an alkoxyisilyl group intended to improve the compatibility of a rubber with a filler such as carbon black, the examiner takes the position that the two polymers are functional equivalents to each other.

10. The examiner therefore takes the position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the (co)polymer rubber of Tsukimawashi by combining said (co)polymer rubber with the claimed amounts of a second polymer rubber of a conjugated diolefin or of a conjugated diolefin and vinyl aromatic compound having a hydroxyl group and  $M_w$  of 90,000-2,000,000, as taught by Kobayashi, to produce a rubber composition that would have improved compatibility with carbon black. Said composition could be used to manufacture a tire having improved tensile strength, as disclosed in both references.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Lenihan whose telephone number is (571)270-5452. The examiner can normally be reached on Mon-Thurs: 7:30-5:00, and every other Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Irina S. Zemel/  
Primary Examiner, Art Unit 1796

Jeffrey Lenihan  
Examiner  
Art Unit 1796

/JL/